



Application No: GB 9919187.6
Claims searched: 1-13

Examiner: L.V.Thomas
Date of search: 12 January 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.R): C6F (FBA, FBB)

Int CI (Ed.7): C12N 1/00, 1/02

Other: Online: WPI, EPODOC, BIOSIS

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	WO 98/31749 A1 (ALLIED COLLOIDS) see p.4 l.19 - p.5 l.7, p.6 ll.14-33, p.7 ll.8-16 and p.12 ll.14-27	1-6
A	WPI Abstract Acc. No. 1997-488205 & RU 2077594 C1 (VYGLAZOV) - see the abstract	1
A	WPI Abstract Acc. No. 1985-018970 & DD 213690 A (INST. TECH. MIKROBIO) - see the abstract	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

CIBA SPECIALTY CHEMICALS WATER
TREATMENTS LIMITED
Patents Department
Cleckheaton Road
Low Moor
Bradford
West Yorkshire BD12 0JZ
ROYAUME-UNI

Date of mailing (day/month/year) 13 February 2002 (13.02.02)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 21907/AC 464	
International application No. PCT/EP00/07466	International filing date (day/month/year) 02 August 2000 (02.08.00)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address MORAN, Paul 10 Spring Gardens Waddington Clitheroe Lancaster BB7 3HH United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☒ the address ☐ the nationality ☐ the residence

Name and Address MORAN, Paul 8 Jonathan Garth Addingham Ilkley West Yorkshire LS29 0TD United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer R. Chrem Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 18 April 2001 (18.04.01)	
International application No. PCT/EP00/07466	Applicant's or agent's file reference 21907/AC 464
International filing date (day/month/year) 02 August 2000 (02.08.00)	Priority date (day/month/year) 14 August 1999 (14.08.99)
Applicant HUGHES, Jonathan et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
01 March 2001 (01.03.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Olivia TEFY Telephone No.: (41-22) 338.83.38
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(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 February 2001 (22.02.2001)

PCT

(10) International Publication Number
WO 01/12778 A3

(51) International Patent Classification⁷: C12N 1/02

(21) International Application Number: PCT/EP00/07466

(22) International Filing Date: 2 August 2000 (02.08.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9919187.6 14 August 1999 (14.08.1999) GB

(71) Applicant (for all designated States except US): **CIBA SPECIALTY CHEMICALS WATER TREATMENTS LIMITED** [GB/GB]; Cleckheaton Road, Low Moor, Bradford, West Yorkshire BD12 0JZ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HUGHES, Jonathan** [GB/GB]; 22 Scholey Road, Rastrick, Brighouse, West Yorkshire HD6 3EW (GB). **WEIR, Steven** [GB/GB]; 29 St. Thomas Gardens, Bradley, Huddersfield, West Yorkshire HD2 1SL (GB). **MORAN, Paul** [GB/GB]; 10 Spring Gardens, Waddington, Clitheroe, Lancaster BB7 3HH (GB).

(74) Common Representative: **CIBA SPECIALTY CHEMICALS WATER TREATMENTS LIMITED**; Patents Department, Cleckheaton Road, Low Moor, Bradford, West Yorkshire BD12 0JZ (GB).

(81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
4 October 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLOCCULATION OF CELL MATERIAL

(57) Abstract: A process of flocculating microbial cell material from a suspending medium which contains cell material, comprising adding to the suspending medium a first polymeric material which is cationic and has intrinsic viscosity of not more than 2 dl/g, and subsequently or simultaneously adding to the suspending medium a second polymeric material which is cationic or substantially non-ionic and has intrinsic viscosity of at least 4 dl/g, and allowing the cell material to flocculate.

WO 01/12778 A3

PATENT COOPERATION TREATY

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REC'D 08 OCT 2001

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 21907/AC 464	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/07466	International filing date (day/month/year) 02/08/2000	Priority date (day/month/year) 14/08/1999
International Patent Classification (IPC) or national classification and IPC C12N1/02		
Applicant CIBA SPECIALTY CHEMICALS WATER TREATMENTS LIMITED		


1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 01/03/2001	Date of completion of this report 04.10.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Hillenbrand, G Telephone No. +49 89 2399 8428



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/07466

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-17 as originally filed

Claims, No.:

1-16 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/07466

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-16
	No:	Claims
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-16
Industrial applicability (IA)	Yes:	Claims 1-16
	No:	Claims

2. Citations and explanations
see separate sheet

- D1: EP-A-0 448 926 (AMERICAN CYANAMID CO) 2 October 1991 (1991-10-02) cited in the application
- D2: US-A-5 552 316 ((SAVAGE CHRISTOPHER M)) 3 September 1996 (1996- 09- 03)
- D3: SHAN, JIAN-GUO ET AL.: 'Flocculation of cell, cell debris and soluble protein with methacryloyloxyethyl trimethylammonium chloride-acrylonitrile copolymer' JOURNAL OF BIOTECHNOLOGY, vol. 49, 1996, pages 173- 178, XP002159714

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Having regard to the documents cited in the International Search Report the subject-matter of Claims 1-16 appears to be novel but lacks the required inventive step.

Document **D1** describes a process for the flocculation of an aqueous enzyme broth which comprises adding to said broth a mixture of (1) a Mannich acrylamide polymer and (2) a dimethyldiallylammoniumhalide polymer. It is not derivable from **D1** that it is necessary to remove cell material first from the fermentation broth by mechanical means. Although parameters like intrinsic viscosity and cationic charge density are not mentioned in **D1** said parameters appear either to be identical to the inherent parameters of the process disclosed in **D1** or could easily be adjusted without applying inventive skill. Guidance is given by **D3** which mentions that the effectiveness of flocculation of cells and cell debris depends on the cationic density of the flocculant (see abstract). Thus, in view of **D1** the subject-matter of Claims 1-16 lacks the required inventive step. It is even not visible which **defined technical feature** could indeed differentiate the claimed matter from said prior art.

Document **D2** describes the clarification of E.coli fermentation broths with a combination of anionic and cationic flocculants. It is not visible which surprising/advantageous effect over said prior art could be involved by using a combination of a first cationic polymer and a second cationic or substantially non-ionic polymer as claimed.

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 21907/AC 464	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/07466	International filing date (day/month/year) 02/08/2000	(Earliest) Priority Date (day/month/year) 14/08/1999
Applicant CIBA SPECIALTY CHEMICALS WATER TREATMENTS LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/07466

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EMBASE, EPO-Internal, BIOSIS, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 448 926 A (AMERICAN CYANAMID CO) 2 October 1991 (1991-10-02) cited in the application the whole document	1-16
Y	US 5 552 316 A ((SAVAGE CHRISTOPHER M)) 3 September 1996 (1996-09-03) the whole document	1-16
Y	SHAN, JIAN-GUO ET AL.: "Flocculation of cell, cell debris and soluble protein with methacryloyloxyethyl trimethylammonium chloride-acrylonitrile copolymer" JOURNAL OF BIOTECHNOLOGY, vol. 49, 1996, pages 173-178, XP002159714 the whole document	1-16

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

9 February 2001

Date of mailing of the international search report

01/03/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Hillenbrand, G

INTERNATIONAL SEARCH REPORT

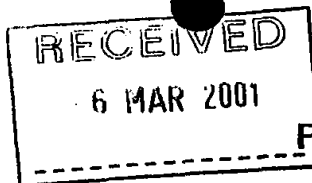
Information on patent family members

International Application No

PCT/EP 00/07466

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0448926 A	02-10-1991	US 4997759 A	05-03-1991
		AT 130868 T	15-12-1995
		AU 631962 B	10-12-1992
		AU 7024291 A	08-08-1991
		BR 9100447 A	22-10-1991
		CA 2035510 A	06-08-1991
		DE 69114884 D	11-01-1996
		DE 69114884 T	15-05-1996
		DK 448926 T	27-12-1995
		ES 2080843 T	16-02-1996
		FI 94259 B	28-04-1995
		FI 910531 A,C	06-08-1991
		JP 3043445 B	22-05-2000
		JP 4211365 A	03-08-1992
		KR 192682 B	15-06-1999
		MX 166641 B	25-01-1993
		ZA 9100810 A	27-11-1991
US 5552316 A	03-09-1996	NONE	

PATENT COOPERATION TREATY



ADMIN

- 1.
- 2.
- 3.
- 4.

From the INTERNATIONAL BUREAU

To:

CIBA SPECIALTY CHEMICALS WATER
TREATMENTS LIMITED
Patents Department
Cleckheaton Road
Low Moor
Bradford
West Yorkshire BD12 0JZ
ROYAUME-UNI

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year) 22 February 2001 (22.02.01)		IMPORTANT NOTICE	
Applicant's or agent's file reference 21907/AC 464			
International application No. PCT/EP00/07466	International filing date (day/month/year) 02 August 2000 (02.08.00)	Priority date (day/month/year) 14 August 1999 (14.08.99)	
Applicant CIBA SPECIALTY CHEMICALS WATER TREATMENTS LIMITED et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AU, KP, KR, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AL, AM, AP, AT, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EA, EE, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, OA, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 22 February 2001 (22.02.01) under No. WO 01/12778

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIP 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38